

PW2302A
20V N-Channel MOSFET

4.2A 20V; $R_{DS(ON)typ}=25m\Omega@4.5V$, $R_{DS(ON)typ}=37m\Omega@2.5V$

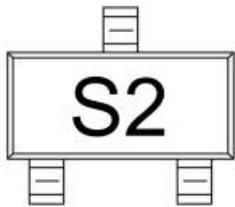
FEATURE

- TrenchFET Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

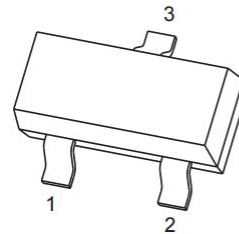
Application

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

MARKING:

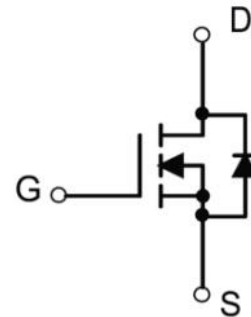


SOT-23



1. GATE
2. SOURCE
3. DRAIN

Schematic diagram



ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------------|----------|--------------------|
| Drain - Source Voltage | V_{DS} | 20 | V |
| Gate - Source Voltage | V_{GS} | ± 12 | V |
| Continuous Drain Current ^{1,5} | I_D | 4.3 | A |
| Pulsed Drain Current ² | I_{DM} | 14 | A |
| Power Dissipation ^{4,5} | P_D | 1.4 | W |
| Thermal Resistance from Junction to Ambient ⁵ | $R_{\theta JA}$ | 89 | $^\circ\text{C/W}$ |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55~+150 | $^\circ\text{C}$ |

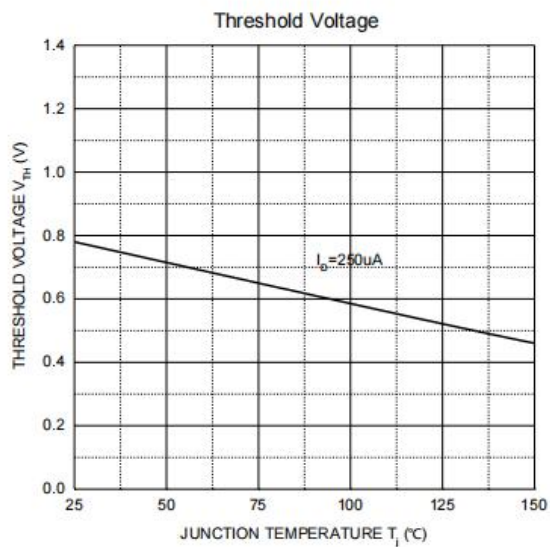
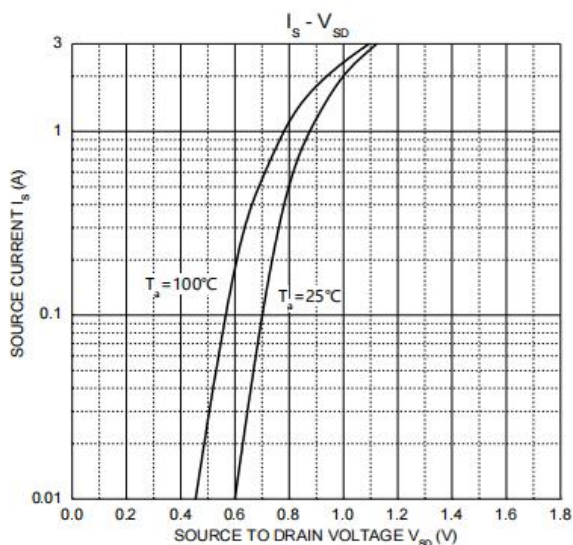
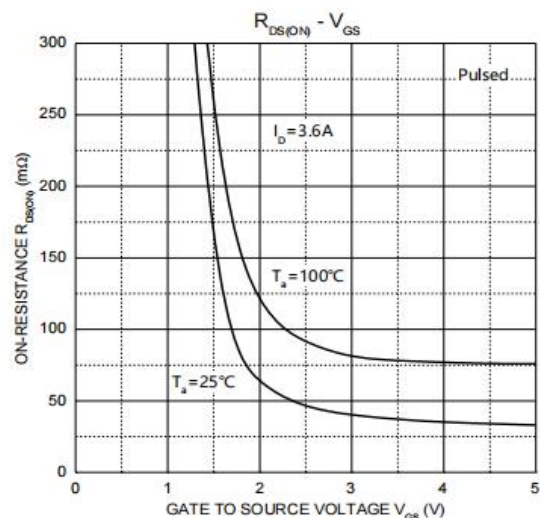
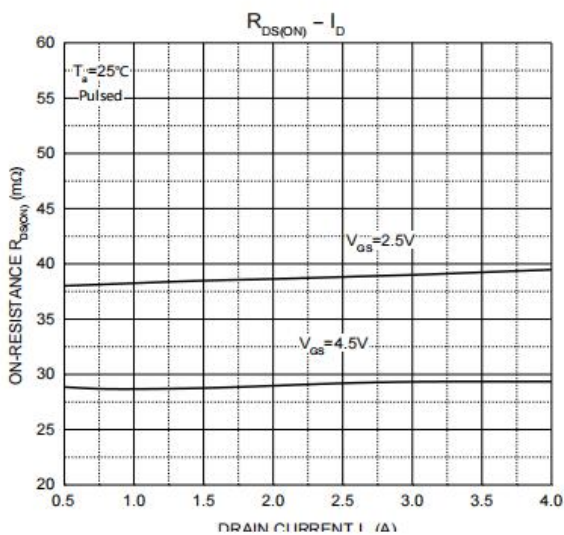
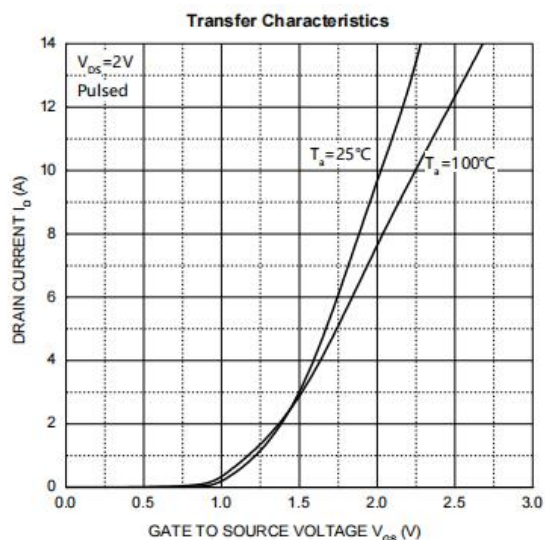
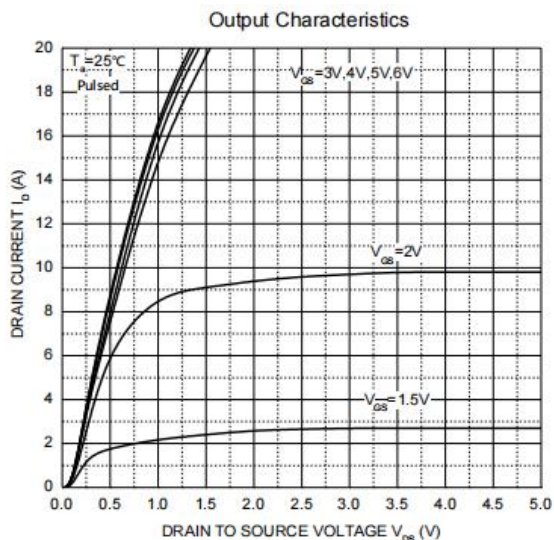
MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|----------------------|---|-----|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 250μA | 20 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = 20V, V _{GS} = 0V | | | 1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} = ±10V, V _{DS} = 0V | | | ±0.1 | μA |
| Gate threshold voltage ³ | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 0.4 | 0.7 | 1.0 | V |
| Drain-source on-resistance ³ | R _{DS(on)} | V _{GS} = 4.5V, I _D = 4.2A | | 25 | 36 | mΩ |
| | | V _{GS} = 2.5V, I _D = 3.0A | | 38 | 53 | |
| Forward tranconductance ³ | g _{FS} | V _{DS} = 5V, I _D = 3.6A | 8 | | | S |
| Dynamic characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} = 10V, V _{GS} = 0V, f = 1MHz | | 596 | | pF |
| Output Capacitance | C _{oss} | | | 105 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 58 | | |
| Total gate charge | Q _g | V _{DS} = 10V, V _{GS} = 4.5V, I _D = 4.3A | | 6.6 | | nC |
| Gate-source charge | Q _{gs} | | | 0.9 | | |
| Gate-drain charge | Q _{gd} | | | 1.5 | | |
| Switching Characteristics | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{DD} = 10V, R _L = 1.5Ω, V _{GEN} = 4.5V, R _g = 3Ω | | 15 | | ns |
| Turn-on rise time | t _r | | | 54 | | |
| Turn-off delay time | t _{d(off)} | | | 19 | | |
| Turn-off fall time | t _f | | | 12 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward voltage ³ | V _{DS} | V _{GS} = 0V, I _S = 1A | | | 1.2 | V |

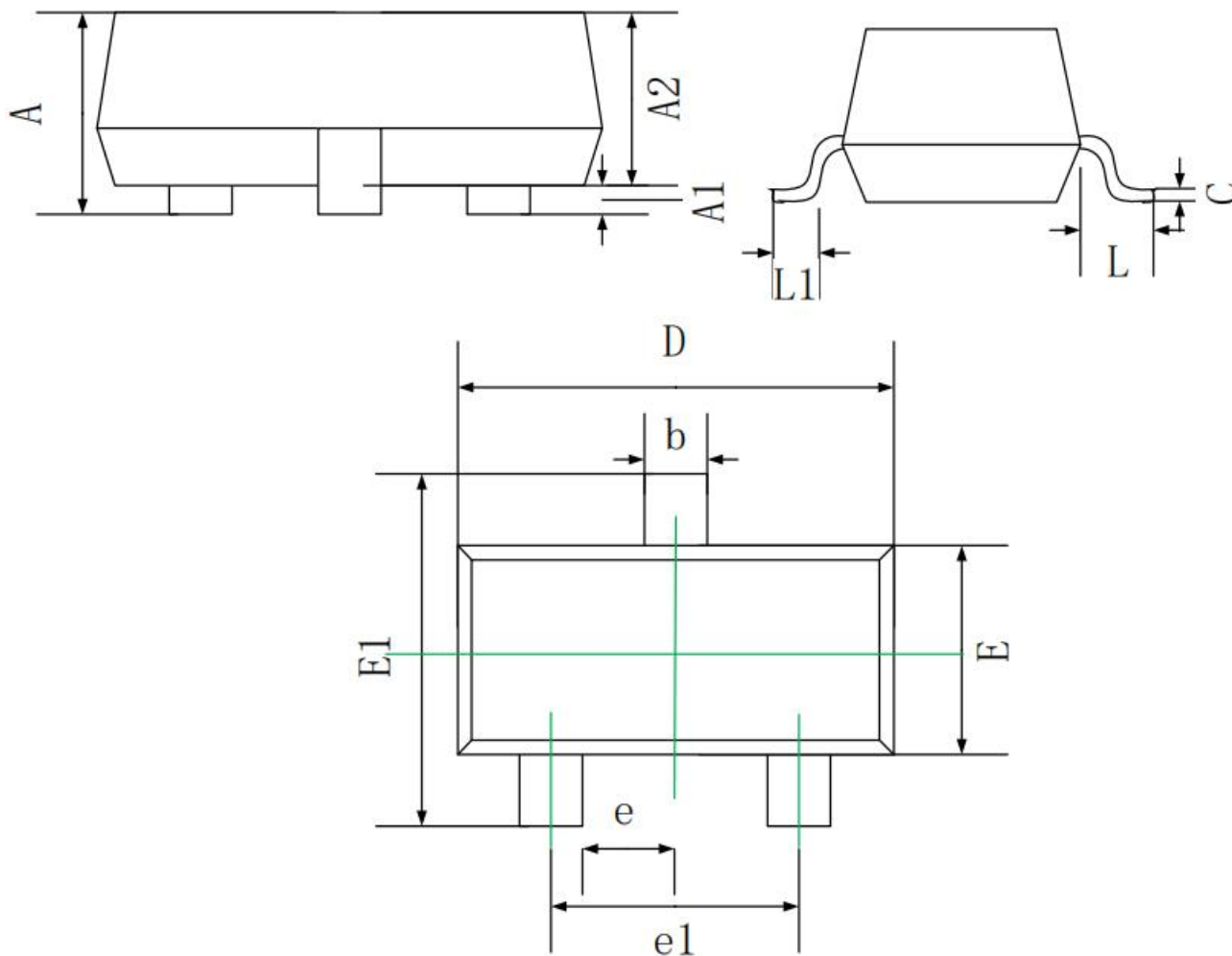
Notes:

- The maximum current rating is limited by package.
- Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- The power dissipation P_D is limited by T_{J(MAX)} = 150°C.
- Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Electrical and Thermal Characteristics



SOT-23 Package Information



| Symbol | Dimensions In Millimeters | |
|--------|---------------------------|------|
| | Min. | Max. |
| A | 0.90 | 1.15 |
| A1 | 0.00 | 0.10 |
| A2 | 0.90 | 1.05 |
| b | 0.30 | 0.50 |
| c | 0.08 | 0.15 |
| D | 2.80 | 3.00 |
| E | 1.20 | 1.40 |
| E1 | 2.25 | 2.55 |
| e | 0.95 REF. | |
| e1 | 1.80 | 2.00 |
| L | 0.55 REF. | |
| L1 | 0.30 | 0.50 |